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Minimizing the Harm Of State Fiscal Volatility

by David Gamage and Jeremy Bearer-Friend

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This report's primary concern is how U.S. state governments should respond to the fiscal volatility created by their balanced budget constraints. Applying the principles of risk allocation theory to this recurring problem, we conclude that states should primarily adjust the rates of broad-based taxes as their economies cycle, rather than fluctuating public spending. More specifically, states should raise their broad-based tax rates during economic downturns and lower them during periods of growth. This is because, as we will demonstrate, volatility causes less overall harm when allocated to wealthy taxpayers than when allocated to poorer taxpayers who rely on government spending.

Forty-nine states have some form of balanced budget requirement.¹ And even the one state that does not — Vermont — has generally acted as though so bound.² Beyond legal mandates, states are also constrained by budget-balancing norms and financial market discipline.³ As state economies have cycled through booms and busts, balanced budget constraints have created significant fiscal volatility. The mild recession of the early 1990s — which created budget crises in many states — was followed by strong growth during the later part of the decade. States used their overflowing coffers to pass numerous tax cuts while increasing funding for a variety of government programs. Yet the bursting

¹James M. Potebra, "Balanced Budget Rules and Fiscal Policy: Evidence From the States," 48 *Nat. Tax. J.* 329, 330 (1995); Advisory Committee on Intergovernmental Relations, "Fiscal Discipline in the Federal System: National Reform and the Experience of the States" at 37 (1987) (categorizing the various types of balanced budget constraints).

²See, e.g., Richard Briffault, *Balancing Acts: The Reality of State Balanced Budget Requirements* 3 (1996). There is actually some controversy as to whether Vermont has a balanced budget requirement. See, e.g., Yilin Hou, "Budgeting for Fiscal Responsibility Over the Business Cycle: A Countercyclical Fiscal Policy and the Multiyear Perspective on Budgeting," *Pub. Administration Rev.* 730, 731 (Sept./Oct. 2007). Regardless, using the broader definition of balanced budget constraints provided in *infra* note 3, Vermont appears to operate similarly to its fellow 49 states.

³See John Petersen, "Changing Red to Black: Deficit Closing Alchemy," 56 *Nat. Tax. J.* 567 (2003); Steven Gold, "State Government Experience With Balanced Budget Requirements: Relevance to Federal Proposals," Testimony Before the U.S. House of Representatives, Budget Committee, Washington, May 13, 1992, for a discussion of why written balanced budget requirements may be less important than informal balanced budget constraints. From here on, this report will use the term "balanced budget constraints" to refer to informal forces that lead states to balance their budgets in addition to the formal legal rules requiring that they do so.

of the tech bubble in 2001 brought a new round of budgetary emergencies, this time of even larger magnitude. By January 2003, combined state budget gaps were estimated at \$75 billion to \$80 billion, or 14.5 percent to 18 percent of total state spending.⁴

In light of that familiar pattern of fiscal volatility for state budgets, this article addresses the following question: What is the optimal allocation of fiscal volatility across state tax and spending programs? Alternatively, which is more harmful as a response to fiscal volatility: tax rate adjustments or spending fluctuations?

As state economies have cycled through booms and busts, balanced budget constraints have created significant fiscal volatility.

To answer that question, this report operates in the realm of second-best solutions. Ideally, states would use first-best measures for reducing fiscal volatility. However, first-best measures — such as weakening balanced budget constraints or adopting rainy day funds — are unlikely to be implemented to the degree necessary to solve state fiscal volatility problems. Indeed, the magnitude of the fiscal volatility created by economic cycles has been growing over time. Although we should certainly strive to eliminate that volatility to the extent we can reasonably do so, the question of how to cope with the remaining volatility will continue to be a pressing problem.

This report proposes solutions to this fiscal volatility problem in terms of “ordinary politics.”⁵ Ordinary politics refers to when policymakers ask academics how they should respond to a given problem at a specific time. During an economic downturn, the ordinary politics question usually involves policymakers asking academics for advice on how to raise additional revenue or cut spending while causing the least economic harm. This is in contrast to “institutional design policy,” a term that refers to

when policymakers ask academics how to reform budgetary institutions and procedures so as to improve the decisions made by future policymakers.

At the level of ordinary politics, economists typically agree that unstable tax policies — such as fluctuating tax rates — are economically harmful. That accepted wisdom can be traced to Adam Smith, who wrote that the “certainty of what each individual ought to pay is, in taxation, a matter of so great importance, that a very considerable degree of inequality . . . is not near so great an evil as a very small degree of uncertainty.”⁶ The popular press and policy advocacy organizations have picked up on that notion to some degree, and often chide politicians for changing tax laws “too frequently,” even when those changes are means of coping with economic cycles.⁷ However, there is essentially no existing literature comparing instability in tax policies to instability in spending policies.⁸ This report remedies the deficiency in the literature by discussing the relative harm caused by allocating fiscal volatility to either tax rate adjustments or to spending fluctuations.

Drawing on principles from risk allocation theory, the report concludes that fiscal volatility should primarily be dealt with by adjusting the rates of broad-based taxes (for example, state sales taxes, income taxes, and property taxes). Compared with fluctuating state government spending, adjusting tax rates can accomplish greater risk spreading and thereby mitigate the harmful effects of fiscal volatility.

Tax rate adjustments are needed to prevent the harmful effects of fiscal volatility from being unduly concentrated in state spending programs.

Broad-based tax rate adjustments accomplish greater risk spreading for three reasons. First, state tax and spending policies are redistributive on the

⁴Jaime Calleja Alderete, Tracy Gordon, and Jon Sonstelie, “Much Ado About Nothing?: Tax and Expenditure Limits and Government Responsiveness” (unpublished manuscript on file with author, 2007).

⁵The distinction between ordinary politics and institutional design policy is drawn from the writings of public choice scholars like James Buchanan and Gordon Tullock. See Gordon Tullock, “Public Choice,” in *The New Palgrave Dictionary of Economics Online*, available at http://www.dictionaryofeconomics.com/article?id=pde2008_P000240. Public choice scholars typically use the term “constitutional politics” in place of “institutional design policy,” but we avoid that phrase as legal audiences (understandably) tend to view “constitutional” rules as being associated with an actual written constitution.

⁶Adam Smith, *The Wealth of Nations*, 351 (University of Chicago Press, reprinted 1976).

⁷See, e.g., “Taxing Simply: Taxing Fairly, Full Report of the District of Columbia Tax Commission,” 132 (available at <http://www.ntanet.org/dctax/dctstudy.htm>) (“One of the long-standing principles of taxation is that taxes should be certain and made clearly known to the taxpayers.”); Arthur P. Hall, “The Cost of Unstable Tax Laws,” 41 Tax Foundation Special Report 1 (1994).

⁸A notable exception is Jesse Edgerton, Andrew Haughwout, and Rae Rosen, “Institutions, Tax Structures, and State-local Fiscal Distress,” 58 *Nat. Tax. J.* 147 (2004). However, Edgerton et al. discuss only the macroeconomic stimulative consequences of fluctuating spending as compared with fluctuating tax rates, ignoring the microeconomic risk allocation consequences that are the focus of this report.

margin, and wealthy taxpayers can absorb the harmful consequences of risk and uncertainty more efficiently than can the less wealthy beneficiaries of state spending programs. Second, because revenue volatility is more than twice as severe as economic volatility, tax rate adjustments are needed to prevent the harmful effects of fiscal volatility from being unduly concentrated in state spending programs. Finally, legal and political constraints prevent public administrators from efficiently mitigating the harm from fiscal volatility, whereas private-sector managers are less constrained.

The following argument for minimizing the harm of state fiscal volatility by adjusting the rates of broad-based taxes is structured in four parts. Section I introduces the trade-off between tax rate adjustments and state spending adjustments. Section II sets the stage for conducting an applied risk analysis of the optimal distribution of fiscal volatility by discussing several background issues and then explaining how risk spreading minimizes the harm from both risk aversion and planning costs. Section III demonstrates why more risk spreading is accomplished by adjusting the rates of broad-based taxes than by fluctuating state government spending. Section IV reiterates the conclusion that adjusting tax rates accomplishes more risk spreading than does fluctuating government spending levels while introducing additional caveats to this approach.

I. Introducing the Tax Rate Adjustment and Spending Adjustment Trade-Off

States have numerous policies they can adjust to cope with fiscal volatility. States can increase and decrease spending programs, either through across-the-board hikes and cuts, or by targeting specific programs. Alternatively, states can raise and lower the rates of broad-based taxes (such as income, sales, and property taxes), or of narrower taxes (such as luxury taxes and capital gains taxes). Or states can broaden and narrow their tax bases by altering the scope of what is subject to taxation. States can also raise and lower license and user fees, or expand and contract the use of other means for generating revenues.

States can respond to fiscal volatility by fluctuating any of those policies, or any combination of the policies. Yet however it is allocated, fiscal volatility creates economic harm. The two main reasons fiscal volatility is harmful arise from risk aversion and from planning costs.

That individuals are generally risk averse is a central feature of the economy and underlies much of financial economics.⁹ Investors charge a substan-

tial risk premium before investing in volatile assets, and certain returns are greatly preferred to variable returns. Fiscal volatility increases the risk and uncertainty inherent in the economy. As Louis Kaplow explains, instability of government policies — such as fluctuating tax or spending programs — is as much a source of risk and uncertainty as are changes in the economic climate: “Whether imposed by the government, by nature, or by a casino, there is risk all the same.”¹⁰

Moreover, fluctuations in government policies create planning costs for anyone affected by the policies. Members of the business community have long complained that “they cannot make plans if they do not have confidence in the tax structure.”¹¹ Similarly, the directors of government programs find it difficult to plan when they do not know the future size of their budgets, as do the programs’ beneficiaries.

Because of factors like risk aversion and planning costs, fiscal volatility is harmful regardless of how it is dealt with. Yet some strategies for coping with fiscal volatility are more harmful than others. In recent years, most fiscal volatility has been allocated to spending programs, with broad-based tax hikes becoming increasingly rare.¹² As the following sections of this report will demonstrate, that allocation is far from optimal. Contrary to current policy, most fiscal volatility should be dealt with by raising and lowering the rates of broad-based taxes.

The rationale for this conclusion comes from risk allocation theory. Lawyers and economists have spent decades developing principles for how best to

¹⁰Louis Kaplow, “Horizontal Equity: Measures in Search of a Principle,” 42 *Nat. Tax. J.* 139, 145 (1989).

¹¹David Bizer and Kenneth Judd, “Taxation and Uncertainty,” 79 *Amer. Econ. Rev.* 331 (1989).

¹²Robert Zahradnik, Iris J. Lav, and Elizabeth McNichol, “Framing the Choices” at 1 (2005), Center on Budget and Policy Priorities. Note that these figures define tax hikes as increases in the statutory tax rates and spending cuts as reductions from projected spending. Nominal spending totals (as opposed to real totals or spending as a percent of GDP) were not cut. See also Irene Rubin, “The State of State Budget Research,” *Pub. Budgeting and Finance*, 49 (2005) (“One conclusion from this research is that states that used to use both revenue increases and spending decreases to close gaps have in recent years ruled out tax increases, leading nearly exclusively to spending reductions.”).

At the time of this writing, it is still too soon to know how the states will respond to the downturn that began in 2008. But early reports suggest that spending cuts continue to dominate tax hikes as the preferred coping strategy. See Center on Budget and Policy Priorities, “New Fiscal Year Brings Painful Spending Cuts, Continued Budget Gaps in Almost Every State Reports Update Severe Impact of Recession on State Finances,” available at <http://www.cbpp.org/cms/index.cfm?fa=view&id=2853>.

⁹Kenneth Arrow, *Essays in the Theory of Risk-Bearing*, 90 (1970).

allocate forms of volatility, risk, and uncertainty.¹³ Those principles play an essential role in our understanding of numerous policy areas — particularly tort law and insurance regulation.¹⁴ Yet this report is an original application of those principles to the fiscal volatility problem.¹⁵

Contrary to current policy, most fiscal volatility should be dealt with by raising and lowering the rates of broad-based taxes.

The central normative finding of risk allocation theory is the principle of risk spreading. All else being equal, dispersed risks are less harmful than concentrated risks. Risk spreading can be accomplished directly — by allocating risk and uncertainty across as many individuals as possible or across as many sectors of the economy as possible. Risk spreading can also be accomplished indirectly — by allocating risk and uncertainty to actors who are better able to purchase insurance against volatility or who are better able to self-insure through borrowing and saving.

To see why coping with most fiscal volatility by adjusting the rates of broad-based taxes furthers the goal of risk spreading, it is useful to make two comparisons. The first comparison considers the risk-bearing characteristics of taxpayers as a class as opposed to the risk-bearing characteristics of the beneficiaries of public spending as a class. The

second comparison considers the risk-bearing characteristics of aggregate government spending activities as opposed to those of aggregate private-sector economic activities.

Comparing taxpayers as a class with the beneficiaries of public spending as a class, it is important to realize that taken as a whole, state fiscal policies are redistributive.¹⁶ At least on the margin, increasing state taxation by a dollar to fund an additional dollar of spending tends to benefit the poor more than the wealthy. Redistributing volatility from the poor to the wealthy accomplishes risk spreading directly, because of the simple fact that the wealthy have more money. Plus, redistributing volatility from the poor to the wealthy accomplishes risk spreading indirectly, because the wealthy are better able to borrow during downturns, save during upturns, and purchase insurance from third parties.

A similar conclusion follows from comparing the risk-bearing characteristics of government spending activities with those of private-sector economic activities. First, it is important to understand that in the absence of tax rate adjustments, revenue volatility is several times larger than economic volatility.¹⁷ Hence, tax rate adjustments are needed to spread fiscal volatility more evenly across the entire state economy, rather than leaving the harmful effects of fiscal volatility unduly concentrated in public-sector spending programs. Second, turning to indirect risk spreading, political constraints limit the extent to which government spending programs can save, borrow, or insure, and the extent to which spending volatility can be efficiently allocated among subprograms. Private-sector economic actors are less constrained on those dimensions.

The risk-spreading principle supports adjusting only the rates of broad-based state taxes, not all state tax instruments.

The principle of risk spreading thus provides a *prima facie* argument for coping with the majority of fiscal volatility through adjusting the rates of broad-based taxes rather than by fluctuating state government spending. However, it is important to note that not all tax rate adjustments promote risk spreading. Fluctuating the rates of a narrow tax borne by only

¹³Those are related concepts. From the perspective of actors affected by tax or spending programs, fiscal volatility can be thought of as a form of either risk or uncertainty.

Although the terms “risk” and “uncertainty” have distinct meanings, the differences between them are unimportant for our purposes. We will thus use the terms “volatility,” “risk,” and “uncertainty” interchangeably. For more on this topic, see, for example, “Choice Under Risk and Uncertainty,” available at <http://cepa.newschool.edu/het/essays/uncert/choicecont.htm>; Arrow, *supra* note 9; Frank Knight, *Risk, Uncertainty and Profit* (1921). When distinctions are made between the terms “risk” and “uncertainty,” “risk” refers to when future outcomes are unknown, but when the probability distribution of those outcomes is known. In contrast, “uncertainty” refers to when neither future outcomes nor the probabilities of those outcomes occurring are known. *Id.* at 233-234.

¹⁴See, e.g., Guido Calabresi, “Some Thoughts on Risk Distribution and the Law of Torts,” 70 *Yale L.J.* 499 (1961).

¹⁵There is an existing literature analyzing the effects of uncertainty on public investment decisions. However, that literature focuses on idiosyncratic risks affecting only a single government program. The literature does not discuss how systematic risks — like fiscal volatility — should be allocated between taxation and spending. See, e.g., Ravi Kanbur, “Risk Taking and Taxation,” 15 *J. of Pub. Econ.* 163 (1980); Kenneth Arrow and Robert Lind, “Uncertainty and the Evaluation of Public Investment Decisions,” 60 *Amer. Econ. Rev.* 364 (1970).

¹⁶See Neil Buchanan, “Social Security, Generational Justice, and Long-Term Deficits,” 58 *Tax L. Rev.* 275, 294 (2005).

¹⁷See Alberto Alesina and Alan Drazen, “Why Are Stabilizations Delayed?” 81 *Amer. Econ. Rev.* 1170 (1991). See also Alberto Alesina and Guido Tabellini, “Why Is Fiscal Policy Often Procyclical?” 6 *J. of the European Economic Association* 1006 (2008).

a small portion of a state's population would not accomplish risk spreading. Moreover, on the level of implementation, not all state taxes can be adjusted without creating excess economic harm. For instance, fluctuating taxes on capital gains is likely a poor method for coping with fiscal volatility, because taxpayers control the timing of when their gains are realized and are likely to delay their gain realizations until periods with lower tax rates. In contrast, timing effects of that sort are a minor problem for adjusting the rates of state property taxes. A full discussion of implementation concerns is beyond the scope of this report, largely because implementation concerns are likely to differ significantly among the various states. Still, it is important to remember that the risk-spreading principle supports adjusting only the rates of broad-based state taxes, not all state tax instruments.

II. Setting the Stage for an Applied Risk Analysis

This section argues that the question of how to best allocate fiscal volatility — between the public sector through fluctuating spending, or the private sector by fluctuating tax rates — should be conceived of as a question of applied risk analysis. However, a few background issues must be resolved before turning to risk analysis theory.

To begin with, one of the central premises of this report is that the question of how best to allocate fiscal volatility can be separated from the question of the optimal size of state government. Yet this premise requires further support. After all, as a conservative critic might ask, if state government spending is largely wasteful, and if taxes are extremely harmful, shouldn't we allocate volatility primarily to wasteful state spending while shielding the private sector from the harmful effects of tax rate fluctuations?

The conservative critic is of course correct, insofar as one accepts the assumptions underlying the conservative argument. If states tax and spend more than is optimal, the harm from tax rate fluctuations will be magnified and the harm from spending fluctuations reduced. Conversely, if states raise too few dollars through taxes, and fund public services below the optimal level, then allocating fiscal volatility to spending will be more harmful than allocating volatility to tax rates, even ignoring the implications of applied risk analysis.

Determining the optimal size of a state government requires making trade-offs between the excess burden caused by taxation and the public good effects and the desirable redistribution caused by

public spending.¹⁸ This report in no way claims that the current size of state governments is optimal. However, if a state's government is either too large or too small, the appropriate response is to address this imbalance directly. Once steady-state optimality has been restored, the question of how to allocate volatility around the new steady state remains an issue.

This report's problem of how states should cope with fiscal volatility is in essence a second-order question. If one has strong beliefs that states currently spend either far too much, or too little, those beliefs will affect one's conclusions about how states should cope with fiscal volatility. Yet whatever a state's noncyclical level of taxes and spending, that level has been effectively chosen by the state's dominant political coalition. A dominant political coalition may choose to change the steady-state level of taxes and spending. But whatever choices a political coalition makes about steady-state policy, it must also decide how to allocate volatility around that steady state. The latter question is primarily a matter of applied risk analysis.¹⁹

As such, the analysis in this part proceeds as though steady-state levels for taxes and spending are approximately optimal. Also, we assume that state spending as a whole is neither a luxury good nor an essential compared with aggregate private-sector spending.²⁰ To illustrate, entertainment purchases are thought to be luxury goods, compared with food purchases. As personal income rises, a typical individual will spend more on entertainment compared with food. If the same relationship held for public goods compared with private consumption, we might want state governments to increase spending during upturns and cut spending during downturns.

¹⁸See, e.g., Vidar Christiansen, "Two Approaches to Determine Public Good Provision Under Distortionary Taxation," 60 *Nat. Tax. J.* 25 (2007); Louis Kaplow, "Public Goods and the Distribution of Income," 50 *Europ. Econ. Rev.* 1627 (2006); Joel Slemrod and Shlomo Yitzhaki, "Integrating Expenditure and Tax Decisions: The Marginal Cost of Funds and the Marginal Benefit of Projects," 59 *Nat. Tax. J.* 189 (2001).

¹⁹Without quantifying the amount of harm that could be mitigated by improving the risk allocation of fiscal volatility, it is hard to know how serious the risk-spreading problem is compared with the size-of-government problem. Yet there already exists an enormous literature examining the size-of-government problem, whereas this is the first report to evaluate the risk-spreading implications of state-level fiscal volatility. To effectively analyze the risk-spreading decision, it is useful to suspend the size-of-government decision.

²⁰For a discussion of the concept of luxury goods, see Paul Krugman, Robin Wells, and Martha Olney, *Essentials of Economics* at 122 (2007).

Yet there is no particular reason to think that government expenditures as a whole are luxury goods compared with aggregate private expenditures. Most state general account spending funds four types of expenditures: elementary and secondary education (36 percent), Medicaid and other public assistance (19 percent), higher education (12 percent), and corrections (7 percent).²¹ Although those expenditures are probably luxury goods compared with food purchases, they are probably not luxury goods compared with many entertainment purchases.

There is no particular reason to think that government expenditures as a whole are luxury goods compared with aggregate private expenditures.

When private consumption is reduced because of tax adjustments, individuals can choose the elements of private consumption on which to reduce their spending. Hence, when taxes are raised during downturns, individuals should respond by reducing spending primarily on luxury goods. When public spending is cut during downturns, program administrators can likewise respond by reducing spending primarily on the most luxury elements of their spending programs. But the process for determining which government expenditures to cut tends to be haphazard and political, and public-sector managers face incentives to maximize the appearance of hardship — so as to fight off calls for further cuts to their budgets — and thus do not necessarily allocate spending cuts to the aspects of their programs that are most like luxuries.²² Overall, it seems reasonable to assume, at least as a first-order (or perhaps zero-order) approximation, that public-sector spending is neither a luxury good nor an essential compared with private-sector spending.

As a final background issue, it is worth briefly discussing the relevance of fiscal stimulus. According to traditional Keynesian models, governments should borrow both to reduce taxes and increase spending during economic downturns (while doing

the opposite during upturns).²³ Of course, balanced budget constraints prevent state governments from borrowing to promote a countercyclical Keynesian stimulus policy.²⁴ Instead, for the purposes of this report, the stimulus question depends on whether tax hikes or spending cuts are more harmful from a stimulus perspective when a state economy is operating below trend.

Although the literature on this question is sparse, a few economists have argued that raising taxes in order to increase spending during downturns may have desirable stimulative effects.²⁵ Nevertheless, the stimulus differences between tax and spending fluctuations at the state level are likely to be small,²⁶ and there is considerable uncertainty in the macroeconomic literature about the efficacy of Keynesian stimulus even at the federal level, in which deficit-financed stimulus is possible and much larger sums of money are at stake.²⁷ As applied to the fiscal volatility question, the stimulative differences between tax and spending fluctuations should probably be considered a minor factor in the overall analysis.

Moving beyond the background issues, the remainder of this article analyzes the question of how states should allocate fiscal volatility as a question of applied risk analysis. Just as risk analysis theory in traditional settings asks which actors and institutions are best able to manage risk and uncertainty so as to minimize their harmful effects, risk analysis as applied to fiscal volatility likewise revolves around whether state spending programs or private-sector taxpayers are better able to cope with the risk and uncertainty that would be created by fluctuating either spending or tax rates. This section will discuss how the two main risk-related harms caused by fiscal volatility can be minimized through risk spreading. The following section will argue that

²³See Alan Auerbach, "Implementing the New Fiscal Policy Activism," available at <http://www.econ.berkeley.edu/~auerbach/implementing-new-fiscal-policy-activism.ii.pdf>; Douglas Elmendorf and Jason Furman, Brookings, *If, When, How: A Primer on Fiscal Stimulus* (2008); Daniel Shaviro, *Do Deficits Matter?* at 205-211 (1997).

²⁴See Super, *supra* note 22, at 2605-2613.

²⁵See, e.g., Edgerton et al., *supra* note 8; Alissa Anderson, "Budget Cuts or Tax Increases: Which Are Preferable During an Economic Downturn?" California Budget Project (2008).

²⁶Glenn Follette, Andrea Kusko, and Byron Lutz, "State and Local Finances and the Macroeconomy: The High-Employment Budget and Fiscal Impetus," 61 *Nat. Tax. J.* 531, 544 (2008) (concluding that the macroeconomic effects of state government policy options are "relatively modest").

²⁷See, e.g., Martin Feldstein, "Rethinking the Role of Fiscal Policy," NBER Working Paper No. 14684 (2009), available at <http://www.nber.org/papers/w14684>; John Taylor, "The Lack of an Empirical Rationale for a Revival of Discretionary Fiscal Policy" (2008), available at www.aeaweb.org/annual_mtg_papers/2009/retrieve.php?pdfid=387.

²¹National Association of State Budget Officers, 2003 State Expenditure Report at 13.

²²See Roger E. Brinner, Joyce Brinner, Matt Eckhouse, and Megan Leahey, "Fiscal Realities for the State and Local Governments: What You Don't Know Will Hurt You; What You Can Learn Will Help You," 43 *Bus. Econ.* 55, 60-62 (2008); John Matthews, "Tax Revenue Volatility and a Statewide Education Sales Tax," *State Tax Notes*, Oct. 17, 2005, p. 305, Doc 2005-17724, or 2005 STT 199-13; David Super, "Rethinking Fiscal Federalism," 118 *Harv. L. Rev.* 2544, 2562-2613 (2005).

maximal risk spreading is accomplished by allocating most fiscal volatility to tax rate adjustments rather than to spending fluctuations.

A. The Harm From Risk Aversion

The first major harm caused by fiscal volatility flows from risk aversion on the part of individuals and economic actors. "It is widely accepted that individuals are not indifferent to uncertainty and will not, in general, value assets with uncertain returns at their expected values."²⁸ Investors typically consider "yield to be a good thing; risk, a bad thing; gambling, to be avoided."²⁹ Financial markets function by trading off between the expected returns of financial products and the volatility surrounding those returns.³⁰ When the expected returns of an investment are volatile, lenders discount the returns, which forces borrowers to pay a risk premium in order to attract investment funds.

Taxpayers prefer certainty about their future levels of taxation, and the beneficiaries of public spending prefer certainty about their future benefit levels. Regardless of whether it is allocated to taxes or to spending, fiscal volatility creates harm because of risk aversion.³¹

The standard explanation for risk aversion comes from the diminishing marginal utility of money.³² Individuals generally value each additional dollar less than the previous dollar, such that having \$2,000 generates less than twice as much utility as

having only \$1,000. Consequently, individuals should and do prefer a 100 percent chance of winning \$1,000 to a 50 percent chance of winning \$2,000. Although the two bets have the same expected dollar value, the second bet produces a lower expected utility.³³

Diminishing marginal utility is not unique to money. Individuals receive diminishing marginal utility from nearly all forms of consumption.³⁴ Even someone who prefers apples to oranges might select an orange in place of the hundredth apple. And while food and clothing might be more essential than entertainment items, the fuller one's fridge and closet the more valuable the entertainment items become compared with additional food and clothing.

In fact, the reason money produces diminishing marginal utility is that all of the goods that can be purchased with money generate diminishing marginal utility.³⁵ At any income level, individuals should purchase the mix of consumption items that maximizes their potential utility from monetary purchases. But as the adage goes, you can't buy happiness. Much of what individuals desire cannot be purchased on the market. The more monetary goods one owns, the less valuable additional monetary goods become compared with nonmarket goods like love, health, and the benefits of public spending.³⁶

Just as the diminishing marginal utility from monetary goods creates risk aversion regarding volatile tax payments, the diminishing marginal utility from publicly provided goods creates risk

²⁸Arrow and Lind, *supra* note 15, at 364.

²⁹Harry Markowitz, "Portfolio Selection," 7 *J. of Fin.* 77, 91 (1952).

³⁰Stephen A. Ross, *Neoclassical Finance* 1 (2005).

³¹See, e.g., Kelly D. Edmiston, "Tax Uncertainty and Investment: A Cross-Country Empirical Investigation," 42 *Econ. Inquiry* 425 (2004).

However, some research has found that volatility in capital income taxation can be welfare enhancing. See, e.g., Michael Dotsey, "The Economic Effect of Production Taxes in a Stochastic Growth Model," 80 *Amer. Econ. Rev.* 1168 (1990); David S. Bizer and Kenneth L. Judd, "Taxation and Uncertainty," 79 *Amer. Econ. Rev.* 331 (1989). See also James Alm, "Uncertain Tax Policies, Individual Behavior, and Welfare," 78 *Amer. Econ. Rev.* 237 (1988) (concluding that uncertainty in the tax base may have positive welfare consequences, while uncertainty in tax rates generally has negative welfare consequences, as tax base uncertainty — but not tax rate uncertainty — deters undesirable tax planning). But see Julie H. Collins and Daniel P. Murphy, "Experimental Evidence of the Effect of Tax Rate Uncertainty on Securities Prices, Investor Clientele, and Tax Payments," 17 *J. of Amer. Tax. Assoc.* 1 (1995) ("These findings imply that prior literature . . . (e.g., Alm 1988) may overstate the welfare loss to investors and the tax revenue loss to government as a result of uncertainty. Our results indicate investors demand 'compensation' for tax rate uncertainty and that this 'risk premium' leads to higher expected investor tax payments.").

³²Kaplow, *supra* note 10, at 152, n.21; Matthew Rabin and Richard H. Thaler, "Anomalies: Risk Aversion," 15 *J. of Econ. Perspect.* 219, (2001).

³³*Id.* Rabin and Thaler argue that the standard view that risk aversion arises from the diminishing marginal utility of money cannot explain that individuals are averse to small risks as well as to large risks. Instead, Rabin and Thaler suggest that risk aversion results from the biases of loss aversion and of mental accounting. There are also other nonstandard theories for why individuals are averse to risk and uncertainty. See, e.g., Yoram Halevy and Vincent Feltkamp, "A Bayesian Approach to Uncertainty Aversion," 72 *Review of Econ. Stud.* 449 (2005). But like the standard model, the nonstandard explanations for risk aversion also conclude that individuals exhibit increasing marginal risk aversion. Hence, the nonstandard views are equally consistent with the arguments of this paper, as is the standard model. (Although we rely on the standard view of risk aversion in the text of the report, because that is far more widely accepted than the alternatives, we note as a tangent that we are partially persuaded by Rabin and Thaler's critique.)

³⁴See Robert S. Pindyck and Daniel L. Rubinfeld, *Microeconomics*, 68-91 (2001).

³⁵*Id.*

³⁶Even billionaires may be frustrated by crime (lack of police funding), traffic (lack of transportation spending), and the like. Purchasing a private jet or one's own security force does not provide a perfect substitute.

aversion to volatile government spending. No matter how much one values goods like public transportation or education, at some point adding more roads and schools becomes less valuable than the private consumption that must be forgone to pay for the *n*th highway or school building.

Because of the diminishing marginal utility of money, concentrated risks are more harmful than dispersed risks. Risk spreading reduces the harm from risk and uncertainty because each marginal unit of risk affecting an individual or economic actor is more harmful than the previous units. Therefore, if two individuals are identical except that one bears a high level of risk and the other a low level, then transferring a unit of risk from the high-risk-bearing individual to the low-risk-bearing individual will reduce the total harm caused by the risk.³⁷ The feature that causes risk aversion — the diminishing marginal utility of money — directly justifies the principle of risk spreading.

B. The Harm From Planning Costs

In addition to the harm created by risk aversion, fiscal volatility creates harm because of planning costs. Risk aversion primarily affects consumption — the degree to which individuals derive value from economic goods. Risk aversion can also significantly affect production, by discouraging risky behavior that would have been expected to create value for society.³⁸ But those effects are secondary. In contrast, planning costs primarily concern production.

Individuals and firms often need to make investment decisions in the present to maximize production in the future. Those decisions sometimes entail sunk costs. For instance, students typically enroll in law school so as to earn a salary from practicing law. If the legal market later changes so that a student can no longer find employment, the time and money spent on law school are not refundable. Similarly,

firms make capital investments to generate future revenues. If demand for a firm's product evaporates, the firm may be unable to recoup the invested resources.

Public administrators must likewise make planning decisions in the presence of sunk costs. For example, schools are built based on projected future education spending. Uncertainty about how much funding will be available for hiring teachers can lead administrators to build schools that are either too small or too large. Education suffers when too many students are crammed into an overcrowded space, but there is little point in having built more classrooms if funds do not permit hiring enough teachers to use them.

Allocating fiscal volatility to expenditures can force administrators to fire staff after putting them through costly training programs, to abandon construction projects that have already been partially built, or to otherwise misallocate resources over time and across types of expenses.³⁹ In addition to those primary costs, volatility in public spending creates secondary costs that fall on the beneficiaries of government programs and on any private-sector individuals or contractors paid to work on the programs. If uncertain funding creates the possibility that administrators will have to fire staff or stop paying for contractors, the administrators will have to pay more to hire the staff and contractors in order to offset their risk premiums.⁴⁰ Moreover, if the staff or contractors incur sunk costs to make themselves eligible for government work, volatile spending will impose further costs on the staff and contractors that will force the administrators to pay even more in order to hire their services.⁴¹

Looking to program beneficiaries, spending volatility can again impose costs even above the harm caused by risk aversion. Individuals and firms often make decisions based on reliance on government programs. Those decisions can involve sunk costs. For instance, firms decide where to build plants based partially on the state of local roads and other infrastructure. If spending is later cut so that the infrastructure quality is no longer sufficient for the firm's purposes, the firm may have to abandon the

³⁷That transfer would be efficient and welfare enhancing following the Kaldor-Hicks method.

³⁸As Kenneth Arrow explains, *supra* note 9, at 137-38, "at any moment society is faced with a set of possible new projects which are on the average profitable though one cannot know for sure which particular projects will succeed and which will fail. If risks cannot be shifted, then very possibly none of the projects will be undertaken." Volatility can deter entrepreneurs and investors from taking on risks that would be expected to improve societal welfare. Moreover, firms as well as individuals can be risk averse. Arrow and Lind, *supra* note 15, at 376. Both the managers of firms and stockholders owning large blocks of shares can cause firms to act in a risk-averse fashion. Consequently, by adding risk to the economy, fiscal volatility can deter both firms and individuals from socially desirable entrepreneurial activities. Although the additional risk caused by fiscal volatility is not directly connected to entrepreneurial activities, it may combine with the risk already inherent in those activities to deter risk-taking behavior that would not have been deterred based on the inherent risk alone.

³⁹Just as planning costs can force administrators to fire staff or abandon projects during downturns, during upturns the administrators may find they have not previously hired enough staff or started construction projects early enough, and that surplus funds can thus not be used efficiently. See Matthews, *supra* note 22, at 306.

⁴⁰*Supra* note 38.

⁴¹For instance, students must apply for teacher training programs at least a year or two in advance of seeking teaching jobs. Because volatile spending makes the availability of teaching jobs fluctuate significantly over time, that volatility probably deters some students who would otherwise be inclined to enter the profession.

plant or pay for expensive alternatives to the infrastructure. Individuals face similar dilemmas if they buy housing based on the quality of neighborhood schools. And if firms structure their severance policies — or individuals make saving decisions — based even partially on state-funded job retraining programs or unemployment benefits, any changes to those benefits can leave individuals worse off than if they had been able to make decisions in anticipation of the changes.

Fiscal volatility thus creates significant planning costs whether allocated to taxes or to public spending. Just as public administrators plan based on expectations about their future budgets, taxpayers make planning decisions based on expected future returns, and volatility in taxes creates uncertainty in those returns. If a tax increase makes an economic activity unprofitable after taxes, the activity may have to be abandoned even if nonrefundable resources have already been expended on the activity.⁴² Plus, as with spending, volatility in taxes also imposes secondary costs on the beneficiaries of private-sector projects and on anyone hired or contracted to work on those projects. If a store closes because it is unprofitable after taxes, anyone who worked at the store or who planned on purchasing needed items from the store will also suffer.

In reference to planning costs, the risk-spreading principle depends on the conclusion of increasing marginal planning costs. All else being equal, a \$2,000 loss of public funding or increase in a tax bill should create more than twice as much harm from planning costs as a \$1,000 funding loss or tax increase.

Whether they operate in the public or private sectors, individuals and organizations generally maintain some level of reserves — or slack — that can be used to meet unexpected challenges.⁴³ For individuals, that slack can include previously saved funds, the ability to temporarily increase work effort, favors that can be called in from friends and family, and anything else the individual can do to cope with a negative shock without abandoning sunk resources. Similarly, organizations can ask their employees to work harder for short periods,

can temporarily reduce employee benefits or overhead, or can engage in a variety of similar coping mechanisms.

Because individuals and organizations have only finite levels of slack, the planning costs associated with fiscal volatility should generate increasing marginal harm. Whereas small amounts of volatility can often be dealt with through reserves, increasing levels of volatility will at some point exhaust available reserves and thus force the abandonment of sunk resources, thereby creating far larger marginal costs.

Furthermore, even after reserves have been expended, we might reasonably expect organizations and individuals to first abandon projects with few sunk costs and to only later abandon projects with greater sunk costs. The ability of economic actors to allocate the costs of volatility across subprojects should further cause volatility to generate increasing marginal planning costs.

Just as the diminishing marginal utility of money justifies the risk-spreading principle regarding risk aversion, the presence of increasing marginal planning costs justifies the risk-spreading principle regarding planning costs. In both cases, transferring a unit of risk from an actor facing significant additional risks to an actor facing few additional risks will reduce the harm caused by that unit of risk, because additional units of risk are more harmful on the margin.

III. Conducting an Applied Risk Analysis for Fiscal Volatility

As the previous section explained, risk spreading can mitigate the harms caused by both risk aversion and planning costs — the two major harms from fiscal volatility. Hence, as a general rule, the optimal method for coping with fiscal volatility is likely to be the method that best accomplishes risk spreading.

The optimal method for coping with fiscal volatility is likely to be the method that best accomplishes risk spreading.

This section argues that maximal risk spreading is accomplished when fiscal volatility is dealt with primarily by adjusting the rates of broad-based taxes. This argument is demonstrated first by comparing the risk-bearing characteristics of taxpayers with the risk-bearing characteristics of the beneficiaries of public spending, and second by comparing the risk-bearing characteristics of public spending activities with those of private-sector economic activities.

⁴²By “unprofitable” we mean unprofitable in the economic sense — a project becomes unprofitable if the resources that must still be invested in order to complete the project could yield greater returns if diverted to an alternative use (the opportunity costs of continuing the project exceed the expected gains).

⁴³See, e.g., Joseph L.C. Cheng and Idalene F. Kesner, “Organizational Slack and Environmental Shifts: The Impact of Resource Allocation Patterns,” 23 *J. of Management* 1 (1997); Jitendra V. Singh, “Performance, Slack, and Risk Taking in Organizational Decision Making,” 29 *Academy of Management J* 562 (1986).

A. Comparing Taxpayers With the Beneficiaries of Public Spending

When fiscal volatility is resolved by fluctuating tax rates, the harmful effects of the volatility fall on taxpayers. Conversely, when fiscal volatility is resolved by fluctuating spending, the harmful effects of the volatility fall on the beneficiaries of public spending programs. To a large degree, those categories overlap, because every citizen of a state both pays taxes and benefits from public spending.⁴⁴ Yet those groups do not overlap perfectly. Some state citizens will receive more net benefit (from spending minus taxes) than will others.

Taken as a whole, state fiscal policy is redistributive on the margin. Many states' tax systems are considered regressive in that they take a higher percentage of poor taxpayers' incomes than they do of rich taxpayers' incomes.⁴⁵ For instance, sales taxes are considered regressive because poor taxpayers typically spend a higher percentage of their income than do rich taxpayers. Nevertheless, in every state, marginal spending is sufficiently progressive so as to more than make up for these regressive taxes.

As mentioned earlier, three-quarters of state general account spending falls into four major categories: elementary and secondary education (36 percent), Medicaid and other public assistance (19 percent), higher education (12 percent), and corrections (7 percent).⁴⁶ Of those, Medicaid and public assistance are clearly progressive in that they primarily benefit poor taxpayers. Moving to the education categories, even though the wealthy often benefit more from education spending than the poor, tax-funded education spending is still highly progressive. The reason is that education dollars are not distributed as unequally as is income. Even if a rich taxpayer with an annual income of \$200,000 derives twice as much value from education spending as a poor taxpayer with an annual income of \$20,000, as a percent of income, the poor taxpayer still receives five times as much benefit as the rich taxpayer.

The key to the above example is that progressivity in taxes is usually measured as a percent of income, while the redistributive quality of spending is usually measured in dollar amounts. Even "regressive" sales taxes take far more in dollars from rich taxpayers than from poor taxpayers. Although education spending might provide more absolute benefit to the rich than to the poor, that disparity is unlikely to be so large as to overpower the greater dollar amounts the rich are paying in taxes. For almost all forms of state spending, raising taxes by \$1 to fund an additional dollar of spending should redistribute resources from rich taxpayers to poor taxpayers.

Of the four major categories of state general account spending, only corrections might be an exception to that rule. Spending on prisons and law enforcement arguably benefits the rich far more than the poor, perhaps enough to overwhelm the differences in tax dollars paid. Following similar logic, it is often argued that the wealthy derive far more benefit from government spending as a whole than do the poor, because there would be little or no wealth without government (in the state of nature).⁴⁷ Yet while that argument might be valid for state expenditures as a whole, its logic fails when considering state expenditures on the margin. When examining the types of spending that are actually cut during downturns and increased during upturns, it seems clear that marginal spending increases benefit the poor more than the wealthy. Most spending fluctuations are in the categories of Medicaid and other public assistance, higher education, and elementary and secondary education. Raising taxes by a couple percentage points to fund additional spending in those areas almost certainly benefits the poor more than the wealthy.⁴⁸

Hence, allocating volatility to taxes causes the effects of the volatility to fall more on wealthy taxpayers, and allocating volatility to spending

⁴⁴Although not every citizen receives direct payments from a state, every citizen benefits to at least some extent from spending programs funding transportation infrastructure, education, the criminal justice system, and the like.

⁴⁵See Robert Landry, "The Regressivity of Individual State Taxes from 1980 to 2000: A Nationwide Comparison," available at http://www.nmtri.org/associations/3740/files/RegressivityPaperWithTables_STN_July2006_LANDRY.pdf.

⁴⁶*Supra* note 21. Again, this paper discusses only state general account spending because that is the spending subject to balanced budget constraints. Spending funded by the states' capital budgets is not usually cut during downturns.

⁴⁷See, e.g., Murphy and Nagel, *The Myth of Ownership* (2002); Joseph Dodge, "Theories of Tax Justice, Ruminations on the Benefit, Partnership, and Ability to Pay Principles," 58 *Tax. L. Rev.* 399 (2005).

⁴⁸For an exception that helps demonstrate the general rule, this result might not apply if the taxes raised to fund the additional spending were head taxes — taxes that take the same dollar amount from each taxpayer. Or, somewhat more plausibly, if only user fees and licenses were raised to pay for additional spending, those revenue sources might be sufficiently regressive so as to make the net effect nonredistributive. But for the major broad-based state taxes (for example, sales taxes, income taxes, and property taxes), raising the tax rates for these taxes on the margin to fund additional state spending in the major state spending categories will almost certainly be redistributive.

causes the effects of the volatility to fall more on poor taxpayers. To make that observation into a normative argument, we need only conclude that volatility causes less overall harm when allocated to wealthy taxpayers than when allocated to poorer taxpayers.

The first argument supporting this conclusion examines the direct risk-spreading effects of redistributing volatility. Remember that both risk aversion and planning costs create increasing marginal harm. Each additional unit of volatility creates more harm from both risk aversion and from planning costs than did the previous units. For risk aversion, harm increases on the margin due to the diminishing marginal utility of money. For planning costs, harm increases on the margin because of finite slack resulting in increasing marginal planning costs.

Even ‘regressive’ sales taxes take far more in dollars from rich taxpayers than from poor taxpayers.

If we look first to risk aversion, the diminishing marginal utility of money means that any given amount of risk will be more harmful when allocated to an individual with more money and less harmful when allocated to an individual with less money. To illustrate, for a taxpayer with an annual income of \$10,000, the possibility of that income going up by \$2,000 or down by \$2,000 constitutes a large risk. Yet if that same risk is instead allocated to another taxpayer with an annual income of \$200,000, the risk becomes much smaller as a percentage of income. The first taxpayer would have to significantly change her consumption portfolio in response to having 20 percent less income. In contrast, the second taxpayer would be far less affected by the possible need to decrease her consumption by only 1 percent. If the two taxpayers are otherwise identical — except for their different monetary resources — the first taxpayer stands to lose far more expected utility from the volatility than does the second taxpayer.⁴⁹

A similar result follows for planning costs, as long as there is a connection between an individual’s monetary resources and her level of slack or reserves. Although that connection is obviously not perfect, when abstracting across an entire state population, it seems reasonable to conclude that

those with higher income levels will also have more slack built into their budgets.⁵⁰ After all, the more income one has, the more one spends, and the more opportunity there is to reallocate one’s resources across spending categories when faced with a downturn. Hence, the planning costs caused by fiscal volatility are also likely to be more harmful when allocated to poor taxpayers than when allocated to wealthier taxpayers.

The indirect risk-spreading effects of redistributing fiscal volatility function much like the direct planning cost effects.⁵¹ Indirect risk spreading occurs when volatility is allocated to individuals who are better able to save, borrow, or use third-party insurance. Through saving during upturns (and using the saved funds to maintain consumption during downturns), an individual can smooth her consumption over time and thus mitigate the harmful effects of fiscal volatility. Borrowing during downturns (and paying off the borrowing during upturns), likewise accomplishes consumption smoothing to mitigate the harmful effects of fiscal volatility. Finally, the use of third-party insurance transfers volatility from the insured individual to other economic actors (who may reside out of state).

Empirically, compared with poor taxpayers, wealthier taxpayers are both more able and more likely to save during upturns, borrow during downturns, and purchase third-party insurance. It is well known that the wealthy tend to save more than the poor and thus have greater savings available to smooth consumption during downturns.⁵² The wealthy do not necessarily borrow more than the poor, but they have a greater ability to access capital markets if they wish to do so.⁵³ Finally, although directly purchasing insurance against downturns is not common, the wealthy can effectively purchase

⁵⁰The move here is similar to the logic typically used to justify making interpersonal utility comparisons based on the diminishing marginal utility of money. There may well be some wealthy taxpayer who derives more utility from a marginal dollar than does some poor taxpayer, but when abstracting across an entire population, it seems reasonable to conclude that wealthy taxpayers as a class will derive less utility from a marginal dollar than will poor taxpayers as a class. Similarly, the wealthy taxpayers as a class should have more slack.

⁵¹Indeed, the direct planning cost effects and the indirect risk-spreading effects are perhaps inextricably intertwined, as borrowing, saving, and the use of third-party insurance are all mechanisms for indirect risk spreading and also forms of slack.

⁵²Richard Blundell, Luigi Pistaferri, and Ian Preston, “Partial Insurance, Information, and Consumption Dynamics,” available at <http://ideas.repec.org/p/ifs/ifsewp/02-16.html>.

⁵³See Ronald Mann and Jim Hawkins, “Just Until Payday,” 54 *UCLA L. Rev.* 855, 886-895 (2007); Michael Barr, “Banking the Poor,” 21 *Yale J. of Regulation* 121 (2004).

⁴⁹Stated more formally, the utility loss that would be experienced by the first taxpayer is higher than the utility loss that would be experienced by the second taxpayer, as the utility-to-dollar values are higher for the first taxpayer than for the second taxpayer.

insurance through the use of options, derivatives, annuities, and other financial instruments.⁵⁴

Consequently, both direct and indirect risk spreading is accomplished by redistributing volatility from the poor to the wealthy. Because state tax and spending programs are redistributive on the margin, fluctuating tax rates as the primary response to fiscal volatility accomplishes more risk spreading than does fluctuating spending levels.

B. Comparing Public Spending Activities With Private-Sector Economic Activities

When comparing taxpayers with the beneficiaries of public spending programs, the focus is on differences among individual state citizens. Yet it is also possible to examine the risk-spreading effects of responses to fiscal volatility from the perspective of a representative taxpayer. Even if all state citizens were identical — or if state fiscal policy was not redistributive — fluctuating tax rates would accomplish more risk spreading than would fluctuating spending levels.

As a starting point, we might think that the principle of risk spreading would call for fiscal volatility to be allocated to public spending programs rather than to private-sector economic activities. After all, downturns occur when the private sector is already suffering because of economic volatility. Shouldn't some of that volatility be allocated to the public sector through spending reductions (and tax cuts)?

Although the intuition behind this argument is correct, the argument is nonetheless misguided. Certainly, public-sector spending should not be completely shielded from the effects of volatility. Spending cuts will likely form a portion of the optimal response to volatility during downturns. However, this intuition ignores the fact that — if tax rates are held constant — a 1 percent reduction in private-sector economic activity results in a considerably more than 1 percent reduction in tax revenue. According to one estimate for the combined 50 states, excluding legislative changes, each 1 percent deviation in GDP growth below its trend reduces total state revenue by 2.5 percent.⁵⁵

The reason that tax revenue is several times more volatile than state economic activity is that the underlying tax base is not overall state economic activity. Instead, the tax bases for most of the major state-level taxes are considerably more volatile than

is state economic activity. Most dramatically, business-level income taxes are incurred only when businesses earn profits.⁵⁶ During an economic downturn, many businesses will show losses or only minimal profits and thus will not pay significant business-level income taxes. The same phenomenon holds to a lesser extent for individual income taxes (particularly for the self-employed). Deductions are likely to remain steady during downturns, while gross earnings decrease, leading to a reduction in taxable income. Moreover, for states that tax capital gains, taxpayers will tend to realize more losses during downturns and more gains during upturns.

Even state sales taxes are typically more volatile than overall economic activity, because state sales taxes tend to exempt services that are more heavily consumed during downturns and often exempt other necessary items like food and medical expenses.⁵⁷ The manufactured consumer goods that are most heavily taxed under most state sales tax systems tend to be purchased more during upturns than in downturns.

Hence, with the notable exception of property taxes, the major state tax systems are all considerably more volatile than overall state economic activity.⁵⁸ On average, state tax revenue has been estimated to be 2.5 times more volatile than gross state products.⁵⁹ In states like California that rely heavily on income taxes and capital gains taxes, the ratio is even more extreme.⁶⁰

Direct risk spreading is achieved when volatility is spread as widely as possible across individuals or sectors of the economy. All else being equal, the direct risk-spreading principle would thus call for fiscal volatility to be allocated across the public and private sectors in proportion to the size of both sectors as a percent of gross state product. Yet without tax rate adjustments, the public sector in a typical state will be forced to absorb more than twice as much volatility as the private sector. To correct that imbalance, tax rates must be adjusted as the

⁵⁶In contrast, a gross receipts tax or a VAT would be due regardless of profitability.

⁵⁷See Kirk Stark, "The Uneasy Case for Extending the Sales Tax to Services," 30 *Florida St. L. Rev.* 435 (2003).

⁵⁸For a more in-depth discussion of the factors inherent in state-level tax systems that contribute to revenue volatility exceeding of economic volatility, see Russell S. Sobel and Gary A. Wagner, "Cyclical Variability in State Government Revenue: Can Tax Reform Reduce It?" *State Tax Notes*, Aug. 25, 2003, p. 569, *Doc 2003-19091*, or 2003 *STT* 164-2.

⁵⁹Brinner et al., *supra* note 22, at 60-63.

⁶⁰Jon David Vasche and Brad Williams, "Revenue Volatility in California," *State Tax Notes*, Apr. 4, 2005, p. 35, *Doc 2005-4744*, or 2005 *STT* 63-2.

⁵⁴The number of individuals insuring through those methods is probably small, but there is no doubt that those techniques are more available to the wealthy than to the poor.

⁵⁵Brinner et al., *supra* note 22, at 60-63.

economy cycles, with rates being raised during downturns and lowered during upturns.

Without tax rate adjustments, the public sector in a typical state will be forced to absorb more than twice as much volatility as the private sector.

Moreover, the principle of indirect risk spreading calls for an even further reallocation of volatility away from the public sector and toward the private sector. The principle of indirect risk spreading supports allocating volatility to actors who are better able to save, borrow, insure, or efficiently reallocate volatility across subprograms. Private-sector economic activities are more able to engage in all those methods for mitigating the harmful effects of volatility than are public-sector spending programs.

To begin with, legal constraints limit the ability of public-sector administrations to engage in borrowing.⁶¹ Those constraints do not always preclude borrowing, but they often place burdensome limitations — such as the need to seek voter approval — that are not similarly placed on private-sector managers.⁶²

Public-sector administrators are less legally constrained in their ability to save or insure, but the political dynamics of the budgeting process create strong incentives against their doing so. The budgets for public-sector programs are set politically, whereas private-sector budgets are often determined — either directly or indirectly — by the market. Consequently, public-sector managers are trained to always demonstrate the need for more funding to protect their budgets.⁶³ Saving and insuring are not usually possible within the dynamics of that budgeting game.

The political budgeting game also interferes with the ability of public-sector managers to efficiently allocate the effects of volatility across subprograms. When budgets are cut during downturns, public-sector managers face incentives to allocate those cuts to politically salient portions of their budget, in an attempt to protect their budgets during subse-

quent rounds of cuts.⁶⁴ Often, that dynamic means that cuts will be allocated to the budget areas in which they are most costly, rather than to the budget lines that can absorb the cuts most efficiently.

Of course, large businesses are not completely immune to politics or to budgeting games of the sort that pervade public-sector spending. But there is usually better oversight within private-sector organizations, and the harmful effects of those political dynamics are tempered by the motivating force of market competition. Even the most liberal economists will generally agree that the private sector is more efficient at producing goods and services, except for public goods that would not be produced without government. The same market forces that make the private sector more efficient than government production — and that more generally justify capitalism as a means of economic ordering — also lead the private sector to be more efficient at mitigating the harmful effects of economic volatility.

The same market forces that make the private sector more efficient than government production lead the private sector to be more efficient at mitigating the harmful effects of economic volatility.

As an example of how budgetary politics can exacerbate the harm from spending fluctuations, political dynamics frequently lead to state social insurance programs bearing a disproportionate share of budget cuts during downturns.⁶⁵ Those programs are especially poor candidates for absorbing the harmful effects of fiscal volatility. State social insurance programs are intended to mitigate the risk of economic misfortune by assisting taxpayers during periods of particular hardship. To function effectively, those programs thus need to spend more resources during economic downturns, because those are the periods in which potential program recipients are especially likely to have suffered hardship. Unfortunately, the historical practice of cutting spending during downturns and increasing spending during upturns has led state governments to reduce funding for social insurance programs during periods of economic adversity, only to restore funding during periods of strong economic growth.

⁶¹See Super, *supra* note 22, at 2605-2607; Richard Briffault, "Foreword: The Disfavored Constitution: State Fiscal Limits and State Constitutional Law," 34 *Rutgers L. J.* 907, 915-918 (2003).

⁶²*Id.*

⁶³See, e.g., David Fligio and Arthur O'Sullivan, "The Local Response to Tax Limitation Measures: Do Local Governments Manipulate Voters to Increase Revenues?" 44 *J. of Law and Economics* 233 (2001).

⁶⁴*Id.*

⁶⁵The analysis here partially draws on the writings of Super, *supra* note 22, at 2562-2613. Note that although some of those programs could theoretically be funded by the market, moral hazard problems may make governments more efficient providers of these programs.

It would be silly to purchase an umbrella that functions only during sunny days. Depriving funding to social insurance programs during downturns and increasing funding during upturns is equally silly. An essential purpose of those programs is to insure against risks; introducing uncertainty to that insurance function makes the insurance considerably less valuable. When spending levels fluctuate, many potential social insurance beneficiaries with strong needs are denied assistance during downturns, while less needy recipients are provided benefits during upturns.

Comparing public-sector spending activities with private-sector economic activities thus further reveals that tax rate adjustments accomplish greater risk spreading than do spending fluctuations. Increasing the use of tax rate adjustments as state economies cycle would reduce some of the harm caused by fiscal volatility.

IV. Conclusions and Caveats

Both when comparing taxpayers with spending beneficiaries and when comparing private-sector economic activities with public-sector spending, the result is the same. Adjusting tax rates accomplishes more risk spreading than does adjusting government spending levels. Moreover, the normative force of those arguments is cumulative. From a baseline of allocating fiscal volatility equally to tax and spending adjustments, each argument pushes the optimum further toward the direction of larger tax rate adjustments and smaller spending fluctuations.

Nevertheless, the optimal response to fiscal volatility is likely to include some amount of spending fluctuations. The harm from allocating risk to any individual actor increases on the margin. The arguments here support allocating the majority of volatility to tax rate adjustments, but at some point, continually increasing the magnitude of tax rate adjustments will cause more harm than would maintaining some degree of spending fluctuations.

This article makes no attempt to quantify its risk-spreading arguments. Instead, it merely argues that tax rate adjustments should form the primary response to fiscal volatility. Whether “primary” means 60 percent of coping responses or 90 percent is left for future research.

Moreover, both the optimal amount of tax rate adjustments and the choice of which taxes to adjust depend on structural features of state economies. The degree to which taxpayers are likely to relocate across state lines or play timing games across tax years in response to tax hikes is an important factor in determining the desirability of tax rate adjust-

ments for those groups. In deciding which taxes to adjust, states will often face a dilemma in which the taxes most affecting upper-income taxpayers (for example, progressive income taxes and capital gains taxes) are the most likely to be avoided through relocation or timing games. Yet many of the advantages of selecting tax rate adjustments over spending fluctuations derive from progressivity. This report has argued that even adjusting the rates of a regressive tax like the sales tax to avoid spending fluctuations is beneficial to lower-income taxpayers, but the risk-spreading advantages of adjusting sales tax rates are less than those of adjusting the rates of more progressive taxes.

One approach for balancing those competing considerations would be to create a new statewide property tax that could be adjusted to have positive tax rates during downturns (so as to offset the reduced revenue being generated by other state tax instruments) while providing a tax refund during upturns. The new property tax could include circuit breakers to increase its progressivity.⁶⁶

The desirability of creating a new statewide property tax compared with other methods for enacting tax rate adjustments is a question largely left for future research. For now, it suffices to reiterate that not all tax rate adjustments accomplish risk spreading. This article has examined only the trade-offs between allocating volatility to broad-based tax rate adjustments compared with across-the-board spending adjustments.⁶⁷ The questions of how best to allocate tax rate adjustments among the various state tax instruments, and how best to allocate spending adjustments among state spending programs, are likewise left for future research. ☆

⁶⁶See John H. Bowman, Daphne A. Kenyon, Adam Langley, and Bethany P. Paquin, “Property Tax Circuit Breakers and Cost-Effective Relief,” *State Tax Notes*, July 27, 2009, p. 235, *Doc 2009-12640*, or *2009 STT 141-3*.

⁶⁷Another possible approach for coping with fiscal volatility is to broaden tax bases during downturns while narrowing them during upturns. That approach is similar to adjusting tax rates in that it results in tax burdens fluctuating across the economic cycle, but it accomplishes that through a different mechanism. However, broadening and narrowing a tax base will generally be suboptimal from a risk-spreading perspective. Changing the elements of a tax base typically affects a much narrower group of taxpayers than does adjusting the rates of the tax instrument, thus causing the effects of volatility to be more concentrated. Also, adjusting the elements of a tax base is likely to engender more undesirable game playing on the part of taxpayers than would adjusting tax rates.